

REMARKS/ARGUMENTS

The Applicants respectfully request reconsideration in light of the amendments set forth above and the arguments set forth below. Within the Office Action, claims 1-26 are rejected under 35 U.S.C. § 103(a). Claims 27-50 are allowed. Accordingly, claims 1-50 are now pending.

Rejections under 35 U.S.C. § 103(a)

Within the Office Action, claims 1-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,714,549 to Phaltankar (Phaltankar) in view of U.S. Patent No. 6,526,056 to Rekhter (Rekhter). The Applicants respectfully traverse these rejections.

Claims 1-13

As described in more detail below, the present invention is directed to Border Gateway Protocol (BGP) update messages. As known to those skilled in the art, BGP is an exterior routing protocol used to exchange routing information between routers in autonomous systems. BGP keeps track of all the routes to destinations and keeps this information in a table containing network reachability information. BGP-configured routers communicate with one another by exchanging different types of messages, including BGP update messages. BGP update messages, identified by a BGP update message header, contain information used to update a router's routing table. This information relates to specific routes to destinations. Accordingly, it will be appreciated that BGP update messages have a specific format and are used for a specific function.

Phaltankar is directed to a resilient network infrastructure that provides connectivity between customer subnetworks and the Internet. [Phaltankar, Abstract] Phaltankar achieves this resiliency by providing multiple switches at each layer of the OSI model so that if one switch fails, its backup takes over. [Phaltankar, Abstract and Figures 1a-c] The multiple switches are all contained in a hosting center 210 that connects customer subnets 28a to an Internet backbone 200. Phaltankar is thus directed to data flow within the hosting center 210.

Within the hosting center 210, an enhanced interior gateway routing protocol (EIGRP) is used to select a path within the hosting center 210 to a host on the Internet backbone 200. [Id., col. 8, lines 59-64] (Phaltankar mistakenly refers to EIGRP as the “well-known ‘enhanced interior gateway redundancy protocol.’”) Phaltankar references the Border Gateway Protocol

(BGP), not as part of his invention, but merely to state that BPG “is performed in the Internet backbone 200 when determining which of the possible communication links between the Internet backbone 200 and the hosting center 210 is to be selected on a given external entry point to the Internet backbone 200 (e.g., one of external access points 17a, 17b).” [Id., col. 8, line 65, to col. 9, line 3] Thus, Phaltankar’s discussions of routing within the hosting center refer to an interior protocol, not BGP.

At col. 14, line 66, to col. 15, line 15, cited within the Office Action, Phaltankar describes the process of adding a new customer to the infrastructure. Phaltankar describes identifying the following parameters: (1) the customer’s Internet Protocol (IP) prefix, that is the IP network number and mask, (2) the customer’s unique connection number, “used solely by for internal network configuration purposes” (col. 15, lines 9-10), and (3) the customer’s Emulated Local Area Network (ELAN) name.

Within the Office Action, it is stated that Phaltankar teaches (1) that autonomous systems communicate routing information using BGP (referencing col. 8, line 39, to col. 9, line 5) and (2) that a routing overlay network is used to communicate routing parameters between the autonomous systems (referencing col. 14, line 66, to line 15, line 15). Within the Office Action, it is further stated that Phaltankar teaches a BGP update message having a network layer reachability information (NLRI) field including a first network prefix and a first network mask (referencing col. 14, line 66, to col. 15, line 15). These characterizations of Phaltankar are inaccurate.

An NLRI field contains IP address prefixes of feasible routes advertised in the update message. The portion of Phaltankar referenced within the Office Action does not state that the network prefix and network mask are part of an NLRI field that forms a BGP update message. As explained above, a BGP update message has a particular format and function and the mere mention of a network and a network prefix do not anticipate their use in a BGP update message.

Within the Office Action it is admitted that “Phaltankar does not detail an origin attribute including an identifier for the routing overlay network.” Next is stated that “Rekhter discloses a private network using tag-implemented egress channel selection wherein an update message carries the origin and the AS-PATH attributes which identifies an autonomous system (AS).” Later, it is stated that “An Official Notice is taken that an Internet router using BGP including routes or prefixes and CIDR (Classless Inter-Domain Routing), thresholding clients clusters, value pair with argument and type were well known in the art.” However, nowhere in the Office Action is stated that Rekhter discloses a BGP update message having an origin attribute that

includes an identifier for the routing overlay network. Moreover, nowhere is it stated that Rekhter discloses a community attribute including an identifier for a private autonomous system.

Moreover, there is no motivation to combine Phaltankar and Rekhter, and none is offered within the Office Action. The sole grounds for motivation provided within the Office Action is that “[a] skilled artisan would have motivation to improve the routing process for a private network and found Rekhter teaching.” The Office Action does not point to any teaching, suggestion, or motivation in the prior art to combine the references is offered. A simple assertion that one skilled in the art would seek to improve on the prior art is not sufficient to support a rejection under § 103.

The body of claim 1 recites a Border Gateway Protocol (BGP) update message that comprises a Network Layer Reachability Information (NLRI) field that includes a first network prefix and a first network mask; an origin attribute that includes an identifier for a routing overlay network; and a first community attribute that includes an identifier for a private autonomous system from a plurality of autonomous systems. As explained above, neither Phaltankar, nor Rekhter, nor their combination teaches, suggests, or provides any motivation for a BGP update message comprising an NLRI field having a first network prefix and a first network mask, an origin attribute having an identifier for the routing overlay network, and a community attribute having an identifier for a private autonomous system. For at least these reasons, claim 1 is allowable over Phaltankar, Rekhter, and their combination.

Claims 2-13 all depend from claim 1. As described above, claim 1 is allowable. Accordingly, claims 2-13 are all allowable as depending from an allowable base claim.

Claims 14-20

Claim 14 is directed to a method of identifying a classless network address as a member of an equivalence class. The method comprises generating a BGP update message and forwarding the BGP update message from a routing overlay network to a plurality of coupled autonomous systems. The BGP update message includes a destination network for a classless address, a network mask for the classless address, an autonomous system (AS) Path Attribute having a value of the route for the network destination, and a first community attribute having an identifier for a private autonomous system from the plurality of coupled autonomous systems.

Within the Office Action, Phaltankar is cited for teaching generating a BGP update message including a destination network and a network mask; Rekhter is cited for teaching an AS path attribute and a community attribute having an identifier for a private AS. As explained above in the discussion of claim 1, that portion of Phaltankar cited within Office Action does not refer to generating a BGP message at all, let alone one routed from a point of presence to a routing overlay network or having the structure recited in claim 14.

Within the Office Action, Rekhter is referenced for disclosing a community attribute including an identifier for a private AS. This reference mischaracterizes Rekhter. At column 5, lines 1-12, Rekhter discusses an internal routing field, not a community attribute. At column 23, lines 27-40, Rekhter discusses a community tag merely to state that it has the attribute “NO_EXPORT.” Nowhere in the cited portion of Rekhter is it taught to generate a BGP update message having a community attribute having an identifier for a private AS, as recited in claim 14. For at least these reasons, claim 14 is allowable over the teachings of Phaltankar, Rekhter, and their combination.

Claims 15-20 all depend on claim 14. As explained above, claim 14 is allowable over the teachings of Phaltankar, Rekhter, and their combination. Accordingly, claims 15-20 are all allowable as depending on an allowable base claim.

Claims 21-26

Claim 21 is directed to a method of communicating network performance parameters for a route in an internetwork. The method comprises advertising a BGP update message from a point of presence in the internetwork to the routing overlay network and, before advertising the BGP update message, generating the BGP update message. The update message includes a classless address, an autonomous system path attribute, and a community string. The classless address includes an identifier for the network destination and a mask for the network destination. The autonomous system path attribute indicates a chain of autonomous systems from the plurality of coupled autonomous systems traversed by the route. The community string includes a first hop autonomous system indicating an ISP coupled to a point of presence and one or more value pairs including a type and an argument. The type indicates the type of performance measurement of the route. The argument indicates a value of the performance measurement of the route.

Again, within the Office Action, Phaltankar (col. 14, line 66, to col. 15, line 15) is cited for teaching a BGP update message comprising a mask for a network address. As explained above, Phaltankar does not teach using a network mask in a BGP update message. Rekhter is cited (col. 10, lines 24-30) as disclosing a community string including a first hop address. This portion of Rekhter discloses mapping address prefixes in a routing table to determine a next-hop IP address and a tag-stack operation. Here, Rekhter does not discuss community strings at all. Finally, pages 35-36 of a document titled “Routing Policy Specification Language (RPSL),” by Alaettinoglu et al. (URL <http://quimby.gnus.org/internet-drafts/draft-ietf-rps-rpls-v2-00.txt>) (Alaettinoglu) are cited as disclosing “one or more value pairs including a type, indicating a type of performance measurements of the route; and an argument, indicating a value of the performance measurements of the route as inherent feature of BGP AS-path attribute.” What Alaettinoglu discloses is a routing language that includes in its dictionary a variable for a BGP aspath attribute. Nowhere does Alaettinoglu disclose that this value is stored in a community string or that the string includes a first hop AS and one or more value pairs as recited in claim 21. Accordingly, none of the prior art, either alone or in combination teaches, suggests, or provides any motivation for generating a BGP update message having a classless address for a network destination of a route, where the classless address includes an identifier for the destination network and a mask for the destination network; a community string including a first hop AS system indicating an ISP coupled to a point of presence and one or more value pairs including a type and an argument, as recited in claim 21. For at least these reasons, claim 21 is allowable over the cited references.

Claims 22-26 all depend on claim 21. As explained above, claim 21 is allowable over the teachings of Phaltankar, Rekhter, and their combination. Accordingly, claims 22-26 are all also allowable as depending on an allowable base claim.

Allowable subject matter

Within the Office Action it is stated that claims 27-50 are all allowable over the cited references.

CONCLUSION

For the reasons given above, the Applicants respectfully submit that claims 1-50 are in a condition for allowance, and allowance at an early date would be appreciated. If the Examiner has any questions or comments, he is encouraged to call the undersigned at (408) 530-9700 so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,

Dated: 1-5-05

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